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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------------------|-----------------------------|
| 10/577,142 | 04/26/2006 | Francois Marion | 290429US2PCT | 4086 |
| 22850 | 7590 | 01/17/2008 | | |
| OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314 | | | EXAMINER CHU, CHRIS C | |
| | | | ART UNIT 2815 | PAPER NUMBER |
| | | | NOTIFICATION DATE 01/17/2008 | DELIVERY MODE ELECTRONIC |

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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|------------------------------|------------------------|---------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/577,142 | MARION, FRANCOIS | |
| | Examiner | Art Unit | |
| | Chris C. Chu | 2815 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 November 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 - 16 is/are pending in the application.
- 4a) Of the above claim(s) 14 - 16 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 - 13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 April 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 7/25/06.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Group I (claims 1 – 13) in the reply filed on October 9, 2007 is acknowledged.

Drawings

2. Figures 1A – 1C should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.
3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because:
 - (A) They do not include the following reference sign(s) mentioned in the description:
 - a. On page 7, line 10, the reference numbers "E1" and "E2" are not referenced in the drawings.
 - (B) They include the following reference character(s) not mentioned in the description:

- a. In Fig. 2A, the reference numbers "L1" and "L2" are not disclosed in the specification.
- b. In Fig. 3, the reference number "A" is not disclosed in the specification.

Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1 – 3, 5 – 8 and 10 – 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Hashimoto (U. S. Pat. No. 6,486,544).

Regarding claim 1, Hashimoto discloses in e.g., Fig. 11 --an-- electronic device (the device in e.g., Fig. 11) comprising:

- an electronic circuit called active element (320; column 9, line 57), comprising a first and a second face (see e.g., Fig. 11), the first face (the surface where the pads 322 are formed) being provided with electrical connections (322; column 10, line 6), arranged on one side of the circuit only (see e.g., Fig. 11),
- a transfer element (330; column 9, line 57. Since applicant does not specifically claim that the transfer element is a printed circuit board or interposer or carrier and the element 330 of Hashimoto transfers heat from the element 320 to the other element, i.e., the substrate 810, hence the element 330 of Hashimoto reads as the transfer element), comprising a first face and a second face (see e.g., Fig. 11) and being assembled to the second face of the active element (320) through its first face (see e.g., Fig. 11), and electrical connections (332; column 10, line 6) on its second face (the surface where the pads 332 are formed), this transfer element (330) being designed to be assembled on another circuit (810; column 12, line 64) on the side of this second face (see e.g., Fig. 11),
- at least one wire connection (312; column 10, line 3. Since the element 312 is very flexible copper layers that connects the elements 322 and 332, the element 312 of Hashimoto reads as the wire connection) between the electrical connections (322 and 332) of the first face of the active element (320) and the second face of the transfer element (330; see e.g., Fig. 11).

Regarding claim 2, Hashimoto discloses in e.g., Fig. 11 the transfer element (330) being assembled to the second face of the active element (320) by a layer of glue or a glue film or a glue strip or soldering means (304; column 10, lines 59 and 60).

Regarding claim 3, Hashimoto discloses in e.g., Fig. 11 the connection (312) being covered by a protection layer (820; column 12, lines 59 – 61).

Regarding claim 5, Hashimoto discloses in e.g., Fig. 11 the electronic circuit (320) comprising a semiconductor circuit (column 9, line 57).

Regarding claim 6, Hashimoto discloses in e.g., Fig. 11 the electronic circuit (320) comprising a CMOS circuit and/or a CCD circuit and/or an interconnections network (column 9, line 57), or a bipolar circuit .

Regarding claim 7, Hashimoto discloses in e.g., Fig. 11 the electronic circuit (330) also comprising photon or radiation detection or emission means and/or possibly mechanical or electromechanical means (column 9, line 57).

Regarding claim 8, Hashimoto discloses in e.g., Fig. 11 a circuit (322) or photon or radiation detection means hybridized onto the first face of the electronic circuit (see e.g., Fig. 11).

Regarding claim 10, Hashimoto discloses in e.g., Fig. 11 the circuits (322) or means hybridized on the first face of the electronic circuit (320), covering connection means located on this first face (see e.g., Fig. 11).

Regarding claim 11, Hashimoto discloses in e.g., Fig. 11 the second face of the transfer element (330) also comprising connection balls or pins or pads (332; see e.g., Fig. 11).

Regarding claim 12, Hashimoto discloses in e.g., Fig. 11 Electronic system comprising one or more devices according to claim 11 (see e.g., Fig. 11), each transfer element in these devices being connected or fixed to a common substrate (the external device, i.e., the mother board) through connection balls or pins or pads (340; see e.g., Fig. 11).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hashimoto in view of Hashimoto (U. S. Pat. No. 6,670,700).

While Hashimoto discloses the use of the transfer element, Hashimoto does not disclose the transfer element comprising a ceramic element. Hashimoto '700 teaches in e.g., Fig. 4 and Fig. 6 a transfer element (20 and 30; column 9, lines 51 – 54) comprising a ceramic element (30; column 10, lines 14 – 23). It would have been obvious to one of ordinary skill in the art at the time when the invention was made to apply the ceramic element of Hashimoto '700 between the elements 330 and the wires of Hashimoto as taught by Hashimoto '700 to increase reliability of the package by providing planarization (column 13, lines 30 – 40).

8. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hashimoto in view of Sugimura (U. S. Pat. No. 6,232,655).

While Hashimoto discloses the use of the electronic circuit, Hashimoto does not disclose a photon emission circuit or means, hybridized on the first face of the electronic circuit. Sugimura teaches in e.g., Fig. 8 a photon emission circuit (22; column 6, line 66) or means, hybridized on the first face of an electronic circuit (20; column 6, lines 57 and 58). It would have been obvious to one of ordinary skill in the art at the time when the invention was made to

apply the photon emission circuit of Sugimura on the first face of the electronic circuit of Hashimoto as taught by Sugimura to detect the electric signals derived from the pixels (column 7, lines 1 – 11).

9. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hashimoto in view of Baek et al. (U. S. Pat. No. 6,835,598).

While Hashimoto discloses the use of the device, Hashimoto does not disclose each device being separated from its neighbor by a distance of less than 60 μm . Baek et al. teaches in e.g., Fig. 12 a distance between the devices (1001 and 1002) being less than 60 μm (since the devices 1001 and 1002 are connected to each other, hence the distance between the devices is zero. Thus, Baek et al. fully meets this limitation). It would have been obvious to one of ordinary skill in the art at the time when the invention was made to apply the distance of Baek et al. into the package of Hashimoto as taught by Baek et al. to decrease the size of the package.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Emoto, Rumer et al., McMahon, Sakamoto et al., Wang et al., Cady et al., Takada et al., Miyoshi and Seidler disclose the back-to-back attached package.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chris C. Chu whose telephone number is 571-272-1724. The examiner can normally be reached on 11:30 - 8:00.

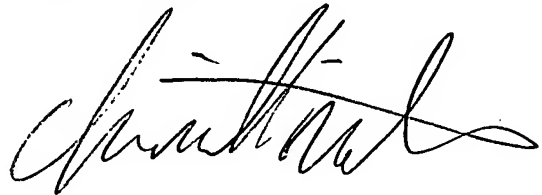
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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth Parker can be reached on 571-272-2298. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Chris C. Chu
Examiner
Art Unit 2815

A handwritten signature in black ink, appearing to read 'Chris C. Chu', with a stylized flourish at the end.

c.c.
Saturday, January 12, 2008